NSF-PFI Research Project

Sustainable Highway Bridges with Novel Materials and Deconstructible Components
Conference Call with Knowledge Enhancement Partners (KEP)
December 16, 2011
AGENDA

1) Introduction
2) Project objectives
4) Role of each KEP
   Konrad Eriksen, Dynamic Isolation Systems (DIS), Inc., McCarran (Sparks), Nevada
   Edward Fyfe, Fyfe Co. LLC, San Diego, California
   Darel Hodgson, Nitinol Technology, Inc., Palo Alto, California
   Edward Little, Fiber Matrix, Inc., Sparks, Nevada
5) Project Advisory Board
6) Graduate student: Sebastian Varela
7) Status of subcontracts
8) Research Components
   Nickel-Titanium
   Engineered Cementitious Composites
   Columns with built-in rubber
   Composites (FRP)
   Deconstructible connections
9) Next step
   Literature search
   Development of preliminary details
   Discussions with KEPs
10) Adjourn
Agenda Item 2 - Objective

The global objective of the proposed PFI project is to develop novel precast concrete bridge elements that can resist extreme loads and yet remain functional. Another objective of the study is to develop connections that allow for deconstruction and reuse of these columns. Through close collaboration with knowledge enhancement partners (KEP’s), advanced materials and details with demonstrated potential through past pilot studies will be adapted for possible use in connections and new details will be devised to disassemble members.

Agenda Item 5 - Advisory Board

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Agenda Item 8 - Research Components

A - Innovative materials: Nickel-Titanium Bars

NiTi in plastic hinges
B- Engineered Cementitious Composites

Damage at 10% drift: left to right, RSC, RNC, and RNE (w/ ECC)

C- Built-in rubber pad details

Lower plastic hinge after final motion: left to right, SMA pier, PT pier, and ISO pier
D- FRP composites

E- Deconstructible columns